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FOREST INSECT INVESTIGATIONS

F. C. Craighead, Entomologist in Charge

Dr. Craighead spent a few days in March visiting points in the Shenandoah Valley with S. H. Marsh, Supervisor of the Shenandoah National Forest. Several southern pine barkbeetle outbreaks were examined and considerable material collected on the rate of growth of killed trees, for the purpose of studying the relation of these epidemics to drought periods. These outbreaks reached greatest proportions last fall and in many places the beetles have killed out all the yellow pines and gone into the neighboring white pines. At very few places, however, were vigorous broods found, indicating that there may be a decline next year.

Dr. Snyder, on returning from Panama, reports that damage by termites to the woodwork of buildings in the Canal Zone is common and severe, while injury to living forest, shade, and fruit trees by the subterranean termite *Coptotermes niger* Snyder is serious; healthy living trees are attacked and killed. No proper methods of preventing or remedying termite damage to buildings are being taken at present by the Canal Zone officials. A series of experiments have been begun in the Canal Zone with wood preservative treatments to prevent termite damage to buildings and their contents, as well as tests of insecticides to kill *Coptotermes* infesting trees. J. Zetek of this Bureau, stationed at Ancon, C. Z., and this Branch are cooperating in these experiments, some of which, through the courtesy of the Tropical Research Station, will be conducted on Barro Colorado Island, where 19 species of wood-boring termites occur.

On March 3, 4, and 5, J. C. Evenden, of the Forest Insect Field Station, Coeur d'Alene, Idaho, gave a series of five illustrated lectures on Forest entomology to the forestry students at the University of Idaho, Moscow, Idaho. On March 10 and 11, Mr. Evenden attended the quarterly meeting of the North Idaho Forestry Association at Spokane, Wash. At this meeting considerable time was given to an informal discussion of forest insect problems.

On March 6, Dr. H. E. Burke lectured before the Zoological Club of Stanford University on Fighting the Western Pine Beetle. The lecture was illustrated by the Department moving picture of the same title.

Control work carried on by the California State Highway Commission against the cypress bark scale (*Ehrhornia cupressi* Ehrhorn), demonstrates conclusively that the method of control recommended by the Palo Alto Laboratory is a complete success. One hundred and twenty-four large cypress trees were sprayed October 31, 1922, with the spray composed of 8 gallons of 28 degree gravity miscible oil, 1 gallon of cresol soap spreader, and 91 gallons of water. Up to

the present time (March 15, 1924), eighteen months after the spraying, repeated examinations have failed to disclose a single living scale. Unsprayed trees in the vicinity used as checks are heavily infested with living scales.

Buprestid larvae (flathead borers) are described as legless. Members of the staff of the Palo Alto Laboratory, however, have at various times collected three specimens belonging to three different species of the genus *Buprestis* which have well developed legs.

W. D. Edmonston reports that the pine cone beetle (*Conophthorus ponderosae* Hopkins) is causing severe and widespread destruction to the seed crop on the vast pine areas in northern New Mexico and Arizona. It is estimated that 90 per cent of the crop is a total loss and on burns and cut-over lands the entire crop has been destroyed. The Forest Service is much concerned about this comparatively new insect depredation as they find that little if any reproduction of pine seedlings can be expected should this invasion continue to persist. It has been increasing in severity during the past five years with the result that the prospective pine cone crop due this season will not materialize. The Bureau of Entomology, Branch of Forest Insects, has been familiar with the life history and habits of this insect for over ten years, and it is hoped that with the establishment of the Forest Insect Field Station at Albuquerque, N. M., an intensive study of this problem can be undertaken and practical remedies for the control of this insect worked out.

Reports of the presence of the boxwood leaf miner (*Monarthropalpus buxi* Lab.) are beginning to reach this office, and William Middleton would like to receive specimens or a note recording it from all localities where it occurs; also, if convenient, the date of adult emergence.

J. E. Patterson and P. D. Sergent have recently been engaged in making an analysis of the ratio of *Dendroctonus brevicomis* entrance holes and exit holes in bark taken from beetle-killed yellow pine trees in southern Oregon. The bark examined was taken from trees killed in every year since 1916. The annual infestations on the areas worked are known for this period. It is hoped and expected that the compilation (now in hand) of these data will show a rather constant interrelation between attack and emergence, and the amount of the subsequent infestation. The analysis of these statistics for any annual infestation may make it possible to predict the amount of the succeeding year's infestation.

TRUCK-CROP INSECT INVESTIGATIONS

J. E. Graf, Entomologist Acting in Charge

R. E. Campbell, entomologist in charge of the Alhambra, Calif., laboratory, recently made an extensive trip through the Pacific Northwest for the purpose of surveying wireworm conditions in that area. He reports that during the past two years a wireworm closely related to the sugar-beet wire-

worm of southern California has caused heavy injury to potatoes and nursery stock. Corn, alfalfa, grain, and general truck crops are damaged to a less extent. While on this trip he conferred with M. C. Lane, of the Ritzville, Wash., laboratory of the Cereal and Forage Insect Investigations, relative to wireworm conditions in the Yakima Valley.

C. F. Stahl, Assistant Entomologist in charge of the Riverside, Calif., laboratory, recently made arrangements for the planting in the Colorado area of some of the sugar beets which are being bred for their resistance to curly-top.

W. A. Thomas, Junior Entomologist in charge of the Chadbourn, N. C., laboratory, visited Pamlico County, N. C., for the purpose of checking over observations on the injury by the seed-corn maggot to seed potatoes.

Dr. A. H. Peterson, of the New Jersey Experiment Station was a recent visitor at the office.

D. E. Fink, Assistant Entomologist, in charge of the Riverton, N. J., laboratory of this Branch, was recently elected an active member of the University of Pennsylvania Chapter of Sigma Xi, the honor scientific fraternity.

W. B. Wheelis has been appointed Junior Entomologist to assist N. F. Howard in research investigations on the Mexican bean beetle.

Alfred Lutkin has been appointed Agent to assist K. L. Cockerham in the eradication of the sweet-potato weevil in southern Mississippi in cooperation with the State Plant Board.

CEREAL AND FORAGE INSECT INVESTIGATIONS

G. A. Dean, Entomologist in Charge

The conference of North Central States official entomologists held at Columbus, Ohio, March 6 and 7, was attended by the following persons of Cereal and Forage Insect Investigations: D. J. Caffrey, L. H. Worthley, E. G. Brewer, W. H. Larrimer, F. W. Poos, A. F. Satterthwait, and Geo. A. Dean.

D. J. Caffrey, F. W. Poos, H. N. Bartley, and Geo. A. Dean were at Niagara Falls, N. Y., March 10, for a conference with the Canadian workers on the European corn borer.

L. H. Worthley was in Ohio and Michigan from March 6 to 15, to discuss plans for the European corn borer control work.

R. A. Vickery, of the Arlington, Mass., laboratory, came to Washington March 20 to spend several days in preparing two or three entomological papers.

Prof. Geo. A. Dean visited the Columbia, S. C., laboratory March 26 and 27, and the Department of Entomology of the North Carolina State College of Agriculture, March 28.

C. N. Ainslie, Entomologist in charge of the Sioux City, Iowa, laboratory of Cereal and Forage Insect Investigations, spent the last two weeks of March visiting his son, George G. Ainslie, Entomologist in charge of the Knoxville, Tenn., laboratory.

C. M. Packard, Entomologist in charge of the Sacramento, Calif., laboratory spent several days in the vicinity of Chino and San Bernardino, Calif., where he was cooperating with R. E. Campbell, of Truck Crop Insect Investigations, in conducting some experiments for the control of the pea aphis on alfalfa, with calcium cyanide dust.

K. W. Babcock, of the Arlington, Mass., laboratory, spent a few days in Washington during the latter part of March in research in connection with European corn borer investigations.

SOUTHERN FIELD-CROP INSECT INVESTIGATIONS

J. L. Webb, Entomologist Acting in Charge

The emergence and development of tobacco insects in the Gulf region has been retarded by the unusual cold this winter.

F. S. Chamberlin, of the Quincy, Fla., station, made a field trip through southern Georgia during the latter part of the month in the interest of insect investigations on cigarette tobacco.

Dr. W. D. Hunter spent several days in Washington during the month. He was accompanied by W. Ohlendorf, of the Federal Horticultural Board, who has collected cotton insects in Mexico on various occasions.

B. R. Coad and Elmer Johnson of the Boll Weevil laboratory were in Washington during the month for the purpose of conferring with officials of this Bureau and other Government organizations in connection with the work in control of the boll weevil.

FRUIT INSECT INVESTIGATIONS

A. L. Quaintance, Entomologist in Charge

James Zetek, in charge of the Bureau's laboratory at Ancon, Canal Zone, will shortly visit Washington for the purpose of discussing plans of future work at the station.

A recent conference was held in Philadelphia for the purpose of discussing all phases of the Japanese beetle project, including quarantine operations. Those present were Drs. T. J. Headlee and A. L. Quaintance, Messrs. L. B. Smith, C. H. Hadley, E. R. Sasser, B. R. Leach, C. W. Stockwell, C. A. Thomas, E. R. Van Leeuwen, W. E. Fleming, G. B. Stichter, T. H. Worsinger, and Prof. C. A. McCue.

G. F. Mozzette, in charge of the Bureau's laboratory at Miami, Fla., made a trip to the Isle of Pines and Cuba recently for the Federal Horticultural Board, for the purpose of making further examinations of fruit cultures of those islands, to determine their freedom, or otherwise, of fruit fly infestation.

MISCELLANEOUS INVESTIGATIONS

(Items from the National Museum contributed by S. A. Rohwer)

Dr. G. C. Crampton of the Massachusetts Agricultural College was in the Museum on March 10 and 11 consulting with various specialists in regard to some of his problems on insect anatomy. He also spent some time in the Division of Invertebrate Zoology consulting with Dr. Waldo L. Schmitt on some of the forms of Crustacea.

The Division of Insects has received for study a third shipment of types of American muscoid flies loaned by the Zoological Museum in Vienna, Austria. This material is a part of that which was the basis of Brauer and Bergenstamm's large work published some 30 years ago. The classification of the material in the National Museum will be very much improved by the study of these types.

A letter written at sea between Santa Marta and Panama has recently been received from Dr. W. M. Mann. He tells of some of his experiences in Colombia as follows:

The avocados that I went to examine were scattered about in the banana fields, marking where huts had stood before the land had been cultivated and most of my time was spent looking for them and slicing open the fruit.

One week end at the Flye estate we had the time of our lives. The house is 4,500 feet high in the mountains and reached by a two-hour mule-back ride, mostly very uphill. The water is cold and can be taken without boiling. More important, collecting was quite good, too.

Carriker, Mr. Flye's son-in-law, is a well-known naturalist and the one that Viereck stayed with when in Colombia. No less than eight people I know personally and several others have

collected there, and stayed with the Flye's. Forel was there, also H. H. Smith (for six months), so the chances of finding new things in two days were pretty poor. But a couple of *Peripatus* walked into my bottle and a few ants and myrmecophiles too.

Dr. William Barnes, of Decatur, Ill., spent about three days in the Division of Insects consulting with Mr. Busck and examining some types in the collection of Lepidoptera.

C. F. W. Muesebeck has recently completed his studies on the hymenopterous genus *Microbracon*.

LIBRARY

Mabel Colcord, Librarian

New Books

Borgmeier, Thomas.

Novos phorideos brasileiros. In Boletim do Museu Nac. do Rio de Janeiro, Ano. 1, N. 1, p. 51-59, illus. November, 1923.

British Association for the Advancement of Science.

Report of the 91st meeting (93d year). Liverpool, 1923- Sept. 12-19. London, J. Murray, 1924. 590 p.

Buckhurst, A. S.

British Hymenoptera... By A. S. Buckhurst... L. N. Staniland... and E. B. Watson... with an introduction by H. M. Lefroy... London, Edward Arnold & Co., 1923. 48 p., illus., pls.

Caldwell, O. W.

Science remaking the world. Garden City, N. Y., Doubleday, Page & Company, 1923. 292 p., illus. pls. Lecture delivered during the summer of 1922 at Teachers College, Columbia University, "Guide to further reading" at ends of chapters.

Chamberlin, J. C.

A systematic monograph of the Tachardiinae or lac insects (Coccidae). In Bulletin of Entomological Research, v. 14, pt. 2, p. 147-212, illus., pl. X-XX, October, 1923.

Deutsche Gesellschaft für Angewandte Entomologie.

Verhandlungen 1st, 3d. 1913, 1921. Berlin, Verlagsbuchhandlung Paul Parey, 1914-1922.

Merkblatt nr. 1 (ser. 3) Halle a S., 1919- Die Traubewickler (heu und sauerwurm) von Dr. S. Stellwaag. 8 p.

Durand, E., and Guicherd, J.

Culture de la vigne en Côte-d'Or. Beaune, Imprimerie Arthur Batault, 1896. 324 p., illus., pls., map. Les parasites et les maladies de la vigne, p. 240-314.

Fries, T. M.

Linnaeus (afterwards Carl von Linné). London, H. F. & G. Witherby, 1923. 416 p., illus, pls., etc. "Select bibliography." p. 392-407.

Gowdey, C. C.

The white flies (Aleyrodidae) of Jamaica. (Jamaica Dept. of Agr. Entomological Bulletin no. 3, Kingston, 1923.)

Hegner, R. W.

Outlines of medical zoology. New York, The Macmillan Company, 1923. 175 p., illus., col. pls. Contains bibliographies.

International Conference of Phytopathology and Economic Entomology, Holland, 1923. Report Ed. T. A. C. Schoevers. Wageningen, H. Veeman & Sons, 1923. 290 p., 15 pl.

Knechtel, W. K.

I. Thysanoptère din România studiu sistematic si fitopatologic (Urmare). III. Descriptia genurilor si a speciilor găsite in Romania. In Ministerul agriculturii si Domeniilor. Directiunea generala a indrumarilor agricole. Directia statistica agricole si a publicatiilor. Buletinul agriculturii, Anul 4, v. 3, 1923, no. 7-9, p. 49-171, 17 pl, July-September, 1923.

Muir, Frederick.

Studies in North American Delphacidae. By F. Muir and W. M. Giffard. Honolulu, 1924. 53 p., 6 pl. (Hawaiian Sugar Planters' Association Experiment station, Entomological Series, Bul. 15.)

The organization of the campaign against locusts in French West Africa. (Official communication.) In the International Review of the Science and Practice of Agriculture, new ser. v. 1, no. 4, p. 823-837, illus. October-December, 1923.

Saalas, Uno.

... Die Fichtenkäfer Finnlands. Studien über die Entwicklungsstadien, Lebensweise und geographische Verbreitung der an *Picea excelsa* Link. lebenden Coleopteren, nebst einer Larvenbestimmungstabelle. II. Spezieller Teil 2 und Larvenbestimmungstabelle. Helsinki, 1923. 7-6 p., 28 pls. (Suomalaisen tiedeakatemian toimituksia. Sarja A. Nro 1) (Annales academiae scientiarum fennicae. ser. A Tom. XXII, N:o 1)

South Dakota State Entomologist.

Fourteenth Annual Report for ... June 30, 1923. (H. C. Severin, State entomologist) Brookings, 1923. 41 p., illus.

Surcouf, J. W. R., and Gonzalez, Rincones, R.

Essai sur les diptères vulnérants du Venezuela. Paris, A. Maloine, 1912. Pt. 2. Diptères brachycères vulnérants. 233 p., illus.

Titschack, E.

Beiträge zu einer Monographie der Kleidermotte, *Tineola biselliella*. In Zeits. Techn. Biol., v. 10, hft. 1-2, p. 1-163, 4 tab., 1922.

